

DOCKET NO.: CACS-0017



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:
Williams, et al.

Confirmation No.: 6295

*#19/ Appeal Brief
Amended
11/6/03*

Serial No.: 09/786,176

Group Art Unit: 2856

Filing Date: November 13, 2001

Examiner: Politzer, Jay L.

For: **SEMICONDUCTOR GAS SENSING**

EXPRESS MAIL LABEL NO: EV251287983US
DATE OF DEPOSIT: October 27, 2003

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APPLICANTS' BRIEF PURSUANT TO 37 C.F.R. § 1.192

Applicants appeal the Final Rejection mailed November 26, 2002, in connection with the above-identified application.

I. Real Parties in Interest

Based on information supplied by Applicants and to the best understanding of the undersigned, the real parties in interest in the above-identified patent application are City Technology Limited of Hampshire, United Kingdom, and the Cambridge University Technical Services Limited, Cambridge, United Kingdom.

II. Related Appeals and Interferences

There are no other appeals or interferences known to Applicants' legal representative, or the assignee that will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. Status of Claims

Claims 1 and 3 are pending in this patent application and are the subject of this Appeal. Claims 1 and 3 stand rejected and appear in Appendix A.

IV. Status of Amendments

No amendments have been requested since the issuance of the Final Rejection.

V. Summary of the Invention

The present invention is directed to methods for sensing the concentration of ozone in a gas mixture using a WO₃ sensor. The claimed methods involve increasing the temperature of the sensor to cause local decomposition of the ozone present in the air. After increasing the temperature of the sensor, the temperature of the sensor is reduced to a measurement temperature and the resulting variation in sensor resistance or conductance is analyzed over time. Using equations and relationships developed and disclosed by Applicants, ozone concentrations can be accurately determined by measuring the resistance of the sensor and the time elapsed since the temperature adjustment.

VI. Issue

Whether the Examiner has demonstrated that the methods recited in claims 1 and 3 would have been obvious to those of ordinary skill in the art in view of U.S. Patent No. 5,811,662 (the "Williams patent") and U.S. Patent No. 4,827, 075 (the "Baker patent").

VII. Grouping of the Claims

Claims 1 and 3 stand or fall together.

VIII. Arguments

The rejection of claims 1 and 3 for alleged obviousness in view of the Williams patent and the Baker patent is improper because the cited references are from different fields, and there is no evidence of record indicating that those of ordinary skill would have been motivated to combine them, much less to combine them in a manner that would have produced a claimed invention.

Patent claims cannot be found obvious in view of a combination of references unless the prior art itself suggests the desirability of the combination. *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 221 USPQ 929 (Fed. Cir. 1984); *Berghauser v. Dann*, 204 USPQ 393 (D.D.C. 1979). “A critical step in analyzing the patentability of claims pursuant to section 103(a) is casting the mind back to the time of invention, to consider the thinking of one of ordinary skill in the art, guided only by the prior art references and the then-accepted wisdom in the field.” *In re Kotzab*, 55 USPQ2d 1313, 1316 (Fed. Cir. 2000). To establish a *prima facie* case of obviousness, “there must be some teaching, suggestion or motivation in the prior art to make the specific combination that was made by the applicant.” *In re Dance*, 48 USPQ2d 1635, 1637 (Fed. Cir. 1998). “In other words, the examiner must show reasons that the skilled artisan, confronted with the same problem as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed.” *In re Rouffet*, 47 USPQ2d 1453, 1458 (Fed. Cir. 1998).

Although the Examiner asserts that it would have been obvious to one of ordinary skill in the art to modify the teachings of the Williams patent to include certain process steps disclosed by the Baker patent, the Examiner has failed to identify any reason a person of ordinary skill would have been motivated to do this in spite of the fact that the two references are directed to different fields of endeavor. The Williams patent, for example, is directed to gas sensors, whereas the Baker patent is directed to a catalytic process for use in the production of hydrocarbons. Although the Examiner appears to acknowledge the references’ unrelated nature – for example, the Examiner contends that Applicants’ claimed inventions somehow would have been obvious “[d]espite [a difference in] Baker’s overall goal” (Final Rejection, paragraph 4) – the Examiner fails to identify any reason to believe that those of ordinary skill would have been motivated to combine the references’ disparate teachings.

The only “reason” that the Examiner identifies is that the Baker patent allegedly “deal[s] with the manufacture of a WO₃ sensor” (Final Rejection, paragraph 4). The Baker

patent, however, clearly does not “deal with” the manufacture of sensors, much less a WO_3 sensor. Rather, it is directed to a catalyst for the production of hydrocarbons. Neither the word “sensor” nor any equivalent thereof appears in the Baker patent, and the patent does not so much as suggest use of the disclosed catalyst in a gas sensor. Further, there is no evidence of record indicating that those of ordinary skill seeking to develop gas sensing methods would have been motivated to consult hydrocarbon production art such as the Baker patent.

The Examiner also fails to acknowledge that there are substantial differences in the design and operating parameters one would consider for catalytic processes as compared to gas sensing methods. Indeed, the properties of a material one would choose for a hydrocarbon production process are different than the desired properties for a gas sensor. A material having a high density of sites on which the gas reaction can take place will generally be considered a good catalyst. Nevertheless, the material may have an electrical band structure that makes the material unsuited for gas detection (i.e. it may be an insulator). In contrast, a gas sensitive material may have a low density of sites on which the gas reaction can take place and, therefore, be classified as a poor hydrocarbon production catalyst. Nevertheless, its electrical band structure may make such a material an excellent candidate for gas detection. For example, chromium titanate is ineffective at oxidizing carbon monoxide, but is a very effective sensor for carbon monoxide (App. B, Exh. 1). It has also been found that for certain materials, such as tin oxide, for example, there is not necessarily a correlation between gas reaction rate and gas sensitivity of a material (App. B, Exhs. 2 and 3).

The difference in preferred surface microstructure between catalysts and gas sensors highlights the differences between sensors and catalysts. For gas sensors, as the surface region (~ 50 nm) is the only active part, the sensor is normally presented either as a porous layer or as a thin film in order to maximize the surface to bulk ratio (App. B, Exh. 4 at 71). A uniform, solid thin film with thickness less than the depletion layer thickness gives the maximum gas sensitivity due to the fact that resistivity of the entire sensing material is affected by the gas (App. B, Exh. 5 at 215 and Exh. 6 at 373).

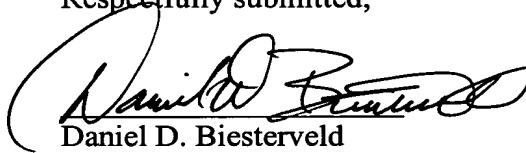
This is clearly different from the requirements for an active catalyst, whereby total available surface area and accessibility to gas are key factors (App. B, Exh. 7 at 108). A uniform, solid thin film has a very low surface area and as such would be very ineffective as a catalyst.

Simply put, one skilled in the art would not have a reasonable expectation of success when modifying the method of gas sensing disclosed by the Williams patent to include steps from the catalyst regeneration process disclosed by the Baker patent. Since there is no reason to believe that those of ordinary skill seeking to develop gas sensing methods would have been motivated to consult the hydrocarbon production art, much less to modify the gas sensing methods disclosed in the Williams patent to include steps from the hydrocarbon production process disclosed by the Baker patent – and since there is, in fact, good reason to believe that those of ordinary skill would not have been so motivated -- a *prima facie* case of obviousness has not been made.

IX. Conclusion

For the foregoing reasons, Applicants request that this patent application be remanded to the Patent Office with an instruction to both withdraw the outstanding rejections and allow the appealed claims.

Respectfully submitted,



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Date: *October 24, 2003*

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**APPEAL BRIEF TRANSMITTAL
PURSUANT TO 37 CFR § 1.192**

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Transmitted herewith in triplicate is the APPEAL BRIEF in this application with respect to the Notice of Appeal received by The United States Patent and Trademark Office on May 27, 2003.

- ☐ Applicant(s) has previously claimed small entity status under 37 CFR § 1.27 .
- ☐ Applicant(s) by its/their undersigned attorney, claims small entity status under 37 CFR § 1.27 as:
- ☐ an Independent Inventor
 - ☐ a Small Business Concern
 - ☐ a Nonprofit Organization.
- ☒ A Notice of Appeal was filed May 22, 2003 and received by The United States Patent and Trademark Office on May 27, 2003. Petition is hereby made under 37 CFR § 1.136(a) (fees: 37 CFR § 1.17(a)(1)-(4) to extend the time period for filing the Appeal Brief from July 27, 2003 to and through October 27, 2003 comprising an extension of the shortened statutory period of **three** months.

	SMALL ENTITY		NOT SMALL ENTITY	
	RATE	FEE	RATE	FEE
<input checked="" type="checkbox"/> APPEAL BRIEF FEE	\$165	\$	\$330	\$330.00
<input type="checkbox"/> ONE MONTH EXTENSION OF TIME	\$55	\$	\$110	\$
<input type="checkbox"/> TWO MONTH EXTENSION OF TIME	\$210	\$	\$420	\$
<input checked="" type="checkbox"/> THREE MONTH EXTENSION OF TIME	\$475	\$	\$950	\$950.00
<input type="checkbox"/> FOUR MONTH EXTENSION OF TIME	\$740	\$	\$1480	\$
<input type="checkbox"/> FIVE MONTH EXTENSION OF TIME	\$1005	\$	\$2010	\$
<input type="checkbox"/> LESS ANY EXTENSION FEE ALREADY PAID	minus	(\$)	minus	(\$)
TOTAL FEE DUE		\$0		\$1280.00

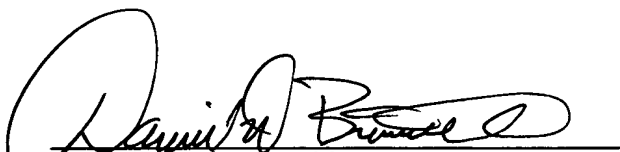
☒ The Commissioner is hereby requested to grant an extension of time for the appropriate length of time, should one be necessary, in connection with this filing or any future filing submitted to the U.S. Patent and Trademark Office in the above-identified application during the pendency of this application. The Commissioner is further authorized to charge any fees related to any such extension of time to Deposit Account 23-3050. This sheet is provided in duplicate.

☒ A check in the amount of **\$1280.00** is attached. Please charge any deficiency or credit any overpayment to Deposit Account No. 23-3050.

☐ Please charge Deposit Account No. 23-3050 in the amount of \$ _____.00. This sheet is attached in duplicate.

☒ The Commissioner is hereby requested to grant an extension of time for the appropriate length of time, should one be necessary, in connection with this filing or any future filing submitted to the U.S. Patent and Trademark Office in the above-identified application during the pendency of this application. The Commissioner is further authorized to charge any fees related to any such extension of time to deposit account 23-3050. This sheet is provided in duplicate.

Date: *October 24, 2003*


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